

CONFIRMATION OF THE PRESENCE OF THE SPOTTED-TAILED QUOLL, *DASYURUS MACULATUS* (DASYURIDAE, MARSUPIALIA) FROM THE LATE PLEISTOCENE KING CREEK CATCHMENT, DARLING DOWNS, SOUTHEASTERN QUEENSLAND, AUSTRALIA.

Memoirs of the Queensland Museum – Nature 59: 9–10. 2014. Quolls (*Dasyurus* spp.) are a rare component of Pleistocene deposits of the eastern Darling Downs. Molnar & Kurz (1997) listed *Dasyurus* sp. from four localities in the King Creek catchment (Queensland Museum Locality (QML) 100, QML796, QML913 and Pilton). Price & Webb (2006) recorded the eastern quoll (*Dasyurus viverrinus*) from QML796, while Price & Sobbe (2005) recorded a quoll from QML1396 that is morphometrically similar to, but showing some morphological difference from the spotted-tailed quoll (*Dasyurus maculatus*). Here we report a new specimen from QML796 that confirms the presence of *D. maculatus* in the late Pleistocene King Creek catchment.

Family DASYURIDAE Goldfuss, 1820

Genus *Dasyurus* Geoffroy, 1796

Dasyurus maculatus Kerr, 1792

Material. Queensland Museum Fossil (QMF) 57026, an isolated unworn right M₁ from QML796 (bulk sediment derived from stratigraphic units A4/ A7 as per Price & Webb 2006) (Fig. 1).

Description. QMF57026 is sub-oval in occlusal outline, with the buccal margin more bulbous than the lingual, measuring 7.01 mm (crown maximum length) × 3.89 mm (crown maximum width). The tallest cusp, the protoconid is placed medially on the buccal margin, while the second tallest cusp, the paraconid is positioned antero-lingually from the protoconid. The metaconid is placed lingually from the protoconid and is approximately equal in height to the paraconid. The hypoconid, entoconid and hypoconulid are lower in height than the other three cusps and form a basin like structure on the posterior of the tooth crown.

Remarks. The position of the cusps on the tooth crown and relatively large size confirms QMF57026 as a species of *Dasyurus*. It is morphologically and morphometrically similar to extant *D. maculatus* (QMJ16744) in the Queensland Museum collections and is assigned to this species. Measurements of lower fourth molars (M₁) of combined extant, sub-fossil and late Pleistocene Australian mainland populations of *D. maculatus* are in the range of 6–7.3 mm (crown max. length) × 3.3–4 mm (crown max. width) (Marshall & Hope 1973) while similar measurements for extant *D. viverrinus* are in the range 5–6 mm × 2.4–3.1 mm (Bartholomai 1971). This places QMF57026 near the upper end of measurements for *D. maculatus* and well above the measurements for *D. viverrinus* further supporting its assignment to *D. maculatus*.

The specimen shows little evidence of stream abrasion hence it is unlikely to have been reworked from an upstream deposit. Unit A7 has an optically stimulated luminescence (OSL) age of 122 ± 22 ka while unit A4 has an OSL age of 107 ± 18 ka (Price *et al.* 2011), thus indicating the presence of the species in the late Pleistocene Darling Downs ecosystem. *Dasyurus viverrinus* is also recorded at QML796 during the above mentioned age range (Price & Webb 2006) indicating that both *D. maculatus* and *D. viverrinus* occurred sympatrically in the late Pleistocene King Creek ecosystem. A similar sympatric occurrence of spotted-tailed and eastern quolls is recorded during the late Pleistocene at Capricorn Caves (Cramb *et al.* 2009). Modern *D. maculatus*, the most arboreal of the extant quolls, occur in a range of habitats including wet and dry sclerophyll forests and vine thickets. The presence of *D. maculatus* may provide additional support for the existence of such

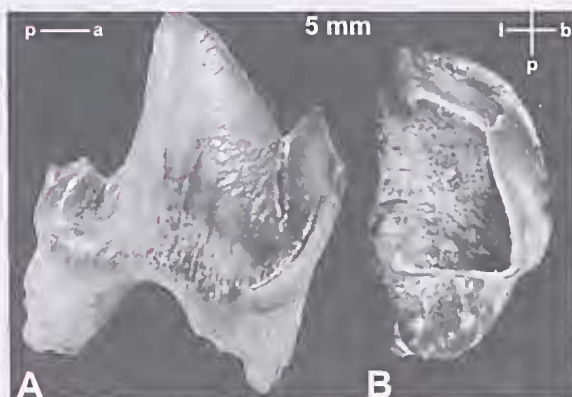


FIG. 1. QMF57026; Right M₁, *Dasyurus maculatus* from QML796. A, Lateral view of buccal surface; B, Occlusal view of tooth crown. Abbreviations: a, anterior; b, buccal; l, lingual; p, posterior.

palaeo-habitats in the Pleistocene King Creek catchment (e.g. Price & Sobbe 2005). The sympatric occurrences of spotted-tailed and eastern quolls in the historic period are known only from more temperate climates of southeastern mainland Australia and Tasmania (Belcher *et al.* 2008; Jones 2008). A similar climate regime may have also been a key factor that allowed both taxa to occur sympatrically on the Pleistocene Darling Downs. In contrast, the modern eastern Darling Downs occurs in the sub-tropical climate belt and retains a population of *D. maculatus*, while *D. viverrinus* is locally extinct. The timing of this extinction is uncertain but is likely to have occurred prior to European occupation as there are no historic records of *D. viverrinus* on the Darling Downs.

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